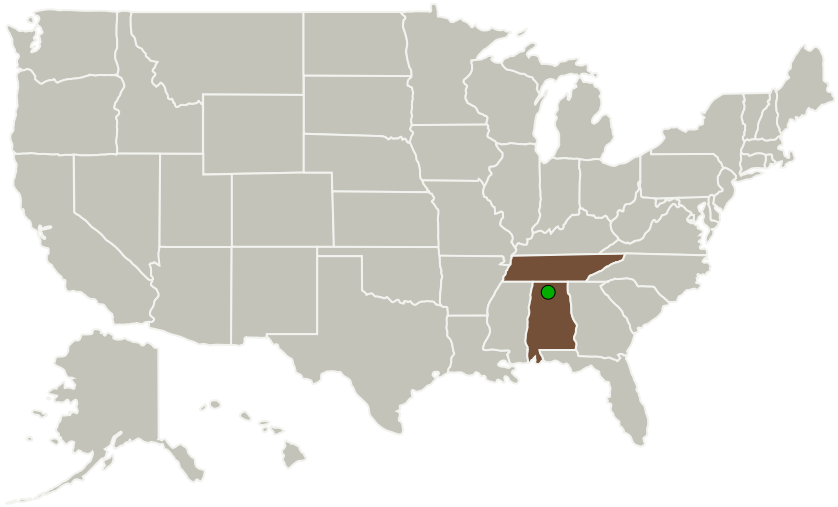
Advanced Hybrid Stage, Phase I

Completed Technology Project (2015 - 2016)

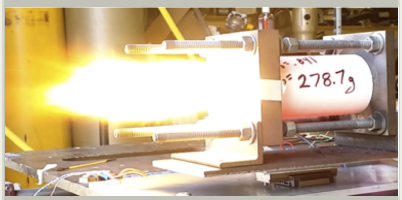
Project Introduction

The proposed technology builds off GTL's advanced solid ramjet fuel. The method uses additive manufacturing methods to produce an innovative new type of fuel grain that regresses quickly and has a high Isp and combustion efficiency. With this technology, the performance of a liquid rocket engine can be had with a hybrid rocket system. This technology allows for a simple, low cost, high performance stage that is well suited for a nano-sat vehicle. Reducing complexity and parts count serves to decrease cost and increase reliability.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Gloyer-Taylor Laboratories LLC	Lead Organization	Industry	Tullahoma, Tennessee
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama
University of Alabama in Huntsville(UAH)	Supporting Organization	Academia	Huntsville, Alabama



Advanced Hybrid Stage, Phase I

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Advanced Hybrid Stage, Phase I

Completed Technology Project (2015 - 2016)

Primary U.S. Work Locations	
Alabama	Tennessee

Project Transitions

June 2015: Project Start

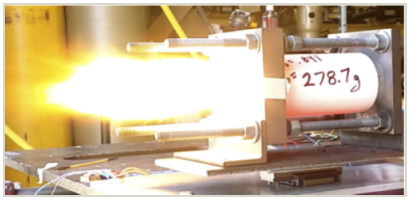
June 2016: Closed out

Closeout Summary: Advanced Hybrid Stage, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138782)*

Images



Briefing Chart Image
Advanced Hybrid Stage, Phase I
(https://techport.nasa.gov/image/131283)

Final Summary Chart Image
Advanced Hybrid Stage, Phase I Project Image
(https://techport.nasa.gov/image/133674)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Gloyer-Taylor Laboratories LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

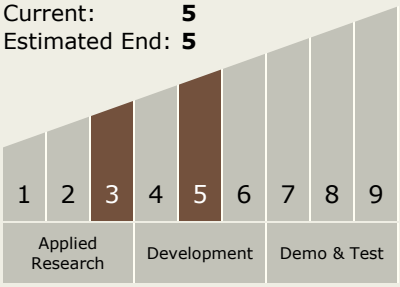
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Eric Jacob

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Advanced Hybrid Stage, Phase I

Completed Technology Project (2015 - 2016)

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.5 Hybrids

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System